

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today as not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

\_\_\_\_\_  
BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES  
\_\_\_\_\_

Ex parte JONATHAN D. MOHN,  
JOHN J. HELMSEN and  
MICHAEL BARNES  
\_\_\_\_\_

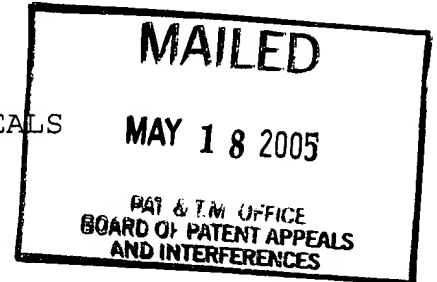
Appeal No. 2005-0556  
Application: 09/611,817  
\_\_\_\_\_

HEARD: APRIL 20, 2005  
\_\_\_\_\_

Before PAK, WALTZ, and TIMM, Administrative Patent Judges.  
PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 4, 11, 13 through 15, 21, 24 and 25. See the Brief, page 2. Claims 5 through 10 and 34 through 36, the other remaining claims in the above-identified application, stand rejected since they are no longer the subject of



this appeal. See the Notice of Appeal dated January 26, 2004, together with the Brief, page 2.

APPEALED SUBJECT MATTER

Claims 1, 11 and 21 are representative of the subject matter on appeal and read as follows:

1. An apparatus for processing a semiconductor substrate, comprising:

a chamber body having an internal volume defined by first and second substantially cylindrical regions and by side walls extending substantially tangent between the first and second substantially cylindrical regions;

a substrate support disposed in the internal volume within the first substantially cylindrical region; and

an exhaust system connected to a chamber outlet disposed in fluid communication with the second substantially cylindrical region.

11. An apparatus for processing a substrate, comprising:

a chamber body having an internal volume, wherein the internal volume is defined by first and second substantially cylindrical regions and by straight side walls substantially tangent to the first and second substantially cylindrical regions;

one or more liners defining within the internal volume a substantially cylindrical processing region within the first substantially cylindrical region and a substantially cylindrical exhaust region within the second substantially cylindrical region, wherein the substantially cylindrical processing region communicates with the substantially cylindrical exhaust region through one or more openings defined by the one or more liners;

a substrate support disposed in the substantially cylindrical processing region; and

an exhaust system in communication with the substantially cylindrical exhaust region through an exhaust port in the process chamber.

21. An apparatus for processing a substrate, comprising:

A chamber body comprising an internal volume and an exhaust port, wherein the internal volume is define by at least first and second substantially cylindrical regions and by straight side walls substantially tangent to the first and second substantially cylindrical regions;

one or more liners defining an exhaust region and a processing region within the internal volume, wherein the exhaust region is co-axial with the exhaust port and the processing region is on a parallel axis with the exhaust region, and wherein the one or more liners define the processing region in the first substantially cylindrical region and define the exhaust region in the second substantially cylindrical region; and

a substrate support disposed in the processing region.

The claimed side walls are inner side walls since they must be "substantially tangent" to first and second internal cylindrical volumes (defined as regions). According to page 12, lines 10-14, of the specification, these "substantially tangent" side walls "effectively maximize the conductance between the gas passageway around the body of the substrate support 216 and the exhaust region above the chamber outlet 208."

PRIOR ART

The examiner relies on the following prior art references:

Tepman et al. (Tepman)	5,730,801	Mar. 24, 1998
Benjamin et al. (Benjamin)	5,820,723	Oct. 13, 1998
Shan et al. (Shan)	0 814 495 A2	Dec. 29, 1997

(Published European Patent Application)

REJECTIONS

The appealed claims stand rejected as follows<sup>1</sup>:

- 1) Claims 1 through 4, 11, 13 through 15, 21, and 24 through 25 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as their invention;
- 2) Claim 1 under 35 U.S.C. § 102(b) as anticipated by the disclosure of Tepman;
- 3) Claims 2 through 4 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Tepman and Benjamin; and

---

<sup>1</sup> The examiner has rejected claims 16 through 18, 26 through 28 and 34 through 35 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Tepman, Shan and Benjamin. See the final Office action dated Sept. 30, 2003. However, these claims are either no longer pending in this application or no longer the subject of this appeal. Accordingly, we decline to consider the merits of this rejection.

- 4) Claims 11, 13 through 15, 21, 24 and 25 under 35 U.S.C.  
§ 103(a) as unpatentable over the combined disclosures of  
Tepman and Shan<sup>2</sup>.

OPINION

We have carefully reviewed the claims, specification and prior art, including all of the evidence and the arguments advanced by both the examiner and the appellants in support of their respective positions. This review has led us to conclude that the examiner's rejections are not well founded. Accordingly, we will not sustain the examiner's rejections for essentially those reasons set forth in the Brief and below.

INDEFINITENESS

As our reviewing court stated in *Seattle Box Company, Inc. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed. Cir. 1984):

When a word of degree is used the district court must determine whether the patent's specification provides some standard for measuring that degree. The trial court must decide, that is, whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification.

---

<sup>2</sup> The examiner inadvertently refers to claims 5 through 10, which are no longer the subject of this appeal. See the Answer, page 7.

The purpose of the second paragraph of Section 112 is to basically insure, with a **reasonable** degree of particularity, an **adequate** notification of the metes and bounds of what is being claimed. See *In re Hammack*, 427 F.2d 1378, 1382, 166 USPQ 204, 208 (CCPA 1970).

Applying the above principles to the present case, we are of the opinion that the recitation "substantially tangent" does not introduce uncertainty into the claims since the application disclosure as a whole provides some standard for measuring or understanding such term of degree. Specifically, in reference to Figure 6a illustrating side walls 204c as tangential to the first and second cylindrical regions, we note that the specification states that "the side wall portions 204c are **substantially tangent** to the first and second cylindrical regions." See the specification, page 12. We also note that the specification indicates that the side walls abutting the first cylindrical region depicted in Figures 6b and 6c are not considered "substantially tangent" to the first cylindrical region. Thus, from our perspective, the disclosure as a whole reasonably conveys to one of ordinary skill in the art that the claimed "substantially tangent" side walls include tangent or near tangent inner side walls which do not abut either one of the cylindrical regions defining an internal volume as illustrated in Figures 6a through 6c. This view is especially appropriate in this case since our reviewing court in

*Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624, 225 USPQ 634, 641 (Fed. Cir.), cert. denied, 474 U.S. 976 (1985) admonishes us that "if the language is as precise as the subject matter permits, the [examiner] can demand no more."

In view of the foregoing, we are constrained to reverse the examiner's decision rejecting claims 1 through 4, 11, 13 through 15, 21, 24 and 25 under Section 112, second paragraph, as being indefinite.

#### ANTICIPATION AND OBVIOUSNESS

As evidence of anticipation and obviousness, the examiner relies on Tepman to teach, *inter alia*, a semiconductor substrate processing device comprising an internal chamber defined by first and second substantially cylindrical regions, and by side walls extending "substantially tangent" between the first and second substantially cylindrical regions. See the Answer, pages 5 and 6. The examiner relies on Shan to teach liners used for defining the internal chamber and Benjamin to teach an inductive-coupling plasma arrangement for generating plasma in the semiconductor substrate processing device of the type described in Tepman. See the Answer, pages 6-8.

The appellants' main argument is that Tepman does not teach inner side walls extending "substantially tangent" between the

first and second substantially cylindrical regions. See the Brief and the Reply Brief in their entirety. The dispositive question is, therefore, whether Tepman teaches the claimed "substantially tangent" inner side walls between the first and second cylindrical regions.<sup>3</sup> On this record, we answer this question in the negative.

As correctly argued by the appellants (the Brief, page 5, and the Reply Brief, page 2), the examiner has not demonstrated that Tepman teaches "substantially tangent" inner side walls between two cylindrical internal regions. The side walls of an exhaust orifice 22 extending between the two cylindrical internal regions illustrated in Tepman appear to abut the two cylindrical regions. See Figure 1. No other disclosures in Tepman referred to by the examiner evince that such side walls are, in fact, substantially tangent as required by the claims on appeal.

In view of the foregoing, we are constrained to reverse the examiner's decision rejecting the claims on appeal under 35 U.S.C. §§ 102(b) and 103(a).

---

<sup>3</sup>The examiner does not argue that Tepman or any other references referred to in this application, alone or in combination, would have suggested the claimed "substantially tangent" inner side walls. See the Answer in its entirety.



Appeal No. 2005-0556  
Application No. 09/611,817

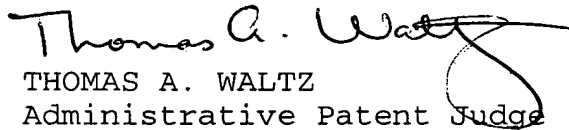
It follows that the decision of the examiner is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED



CHUNG K. PAK  
Administrative Patent Judge



THOMAS A. WALTZ  
Administrative Patent Judge



CATHERINE TIMM  
Administrative Patent Judge

BOARD OF PATENT  
APPEALS AND  
INTERFERENCES

CKP:dal

Appeal No. 2005-0556  
Application No. 09/611,817

APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA CA 95050